

WHAT IS CLAIMED IS:

- 1 1. A battery monitoring system comprising:
2 a component for determining the magnitude of current flowing through
3 a battery cable based on a magnetic field produced by the current;
4 wherein the component is configured to provide an output signal
5 representative of the magnitude of current for use in characterizing the battery.
- 1 2. The system of Claim 1 wherein the component comprises a Hall effect
2 sensor.
- 1 3. The system of Claim 1 further comprising an element coupled to the
2 component for detecting a magnetic field when the element is provided adjacent a
3 battery cable.
- 1 4. The system of Claim 3 wherein the element comprises a magnetic
2 material.
- 1 5. The system of Claim 3 further comprising a housing for containing at
2 least a portion of the element.
- 1 6. The system of Claim 5 wherein the system further comprises a body
2 for containing electronic components and wherein the housing is coupled to the body.
- 1 7. The system of Claim 6 wherein the electronic components are
2 configured to perform calculations to characterize the battery.
- 1 8. The system of Claim 6 wherein the housing is coupled to the body by a
2 hinge.
- 1 9. The system of Claim 6 further comprising an aperture defined by the
2 housing and the body for receiving a battery cable therein.
- 1 10. The system of Claim 9 further comprising an insert provided in the
2 aperture, the insert including an aperture provided therein.

1 11. The system of Claim 1 wherein the system further comprises a
2 connector for providing an interface with a vehicle electrical system.

1 12. The system of Claim 1 further comprising a structure for attaching the
2 system to a vehicle component.

1 13. The system of Claim 1 wherein system is configured for coupling to at
2 least a portion of the battery cable.

1 14. The system of Claim 1 wherein the component comprises a reed
2 switch.

1 15. A method for characterizing a battery utilizing a battery monitoring
2 system, the battery monitoring system adapted to characterize the battery utilizing at
3 least one mathematical construct, the method comprising:

4 Inferring a magnitude of battery current based on a magnetic field
5 generated by current flowing through a battery cable coupled to the battery.

1 16. The method of Claim 15 wherein the battery current is selected from a
2 charging current and a discharging current.

1 17. The method of Claim 15 wherein the step of inferring the magnitude of
2 battery current utilizes a Hall effect sensor.

1 18. The method of Claim 15 wherein the step of inferring the magnitude of
2 battery current utilizes a reed switch.

1 19. The method of Claim 15 wherein the step of inferring the magnitude of
2 battery current comprises detecting a magnetic field adjacent the battery cable and
3 providing an output signal representative of the magnitude of the battery current based
4 on the strength of the magnetic field.

1 20. The method of Claim 15 further comprising utilizing the inferred
2 magnitude of battery current in a mathematical construct utilized to characterize the
3 battery.

1 21. The method of Claim 15 further comprising calculating the magnitude
2 of the battery current based on a voltage measurement to produce a calculated current
3 value.

1 22. The method of Claim 21 further comprising comparing the calculated
2 current value to the inferred magnitude of battery current.

1 23. The method of Claim 22 further comprising utilizing the inferred
2 magnitude of battery current to determine the accuracy of the calculated current value.

1 24. The method of Claim 21 further comprising utilizing a current value
2 for a mathematical construct that is a weighted average of the calculated current value
3 and the inferred magnitude of battery current.

1 25. The method of Claim 21 further comprising utilizing the inferred
2 magnitude of battery current to provide a limit for the calculated current value and
3 utilizing the limited calculated current value in a mathematical construct for
4 characterizing the battery.